



## ATOP-R&D

### Human Factors Newsletter # 05-12

June 25, 2005 – July 8, 2005

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**Technical Note:** The project titled "Vision Testing Requirements for Certain Persons Maintaining and Inspecting Aircraft and Aircraft Components" is complete. The objective was to determine acceptable vision standards and procedures for personnel involved in non-destructive inspection and testing (NDI/NDT) and visual inspection of aircraft and aircraft components. The desired output of the project was to develop an acceptable standard by which visual acuity testing will be performed and documented for those persons inspecting aircraft and aircraft components. The project determined visual acuity requirements for persons maintaining and inspecting aircraft and aircraft components to maintain an acceptable level of safety.

The research project was divided into two efforts. NASA-Ames determined what is an acceptable vision acuity standard for NDI/NDT, and Ohio State University/CAMI conducted visual optometry analysis to determine how the standard would affect the NDI/NDT population. Project reports are located below.

(1) NASA-Ames final report: Detection of Blurred Cracks: A Step Towards an Empirical Vision Standard - <http://www.hf.faa.gov/docs/508/docs/maintStdFinalReport.pdf>

(2) NASA-Ames FY04 annual report: Empirical Basis for an Occupational Vision Standard - <http://www.hf.faa.gov/docs/508/docs/maintFY04NASAvisionrpt.pdf>

(3) NASA-Ames interim report: Occupational Vision Standards: A Review - <http://www.hf.faa.gov/docs/508/docs/maint/FY02/VisionNASainterimRpt.pdf>

(4) OSU/CAMI interim report: Vision Standards and Testing Requirements for Nondestructive Inspection (NDI) and Testing (NDT) Personnel and Visual Inspectors - <http://www.hf.faa.gov/docs/508/docs/maint/FY02/VisionCAMIinterimRpt.pdf>

(5) OSU FY04 annual report: An Analysis of the Visual Demands Associated with Aviation Maintenance Inspectors - <http://www.hf.faa.gov/docs/508/docs/maintFY04OSUvisionrpt.pdf> and <http://www.hf.faa.gov/docs/508/docs/maintFY04OSUvision2rpt.pdf>

*This research supports the Administrator's Flight Plan Goal for Increased Safety, Objectives 1 and 2: Reduce the commercial fatal accident rate; reduce the number of fatal accidents in general aviation*

Point of Contact: W. Krebs, ATO-P R&D

### **New Job Announcement: Program Director for Human Factors**

The FAA is now accepting applications for this position. The Program Director for Human Factors is responsible for leading a major agency-wide human factors program. The incumbent provides executive direction and leadership as well as executive level advice and guidance in all human factors research and development programs for the Federal Aviation Administration (FAA). The incumbent reports directly to the Director, Operations Planning Research and Development on systems acquisition issues and human factors research. Areas include: human computer interface for air traffic control, controller aircrew interface, aircrew performance, cockpit resource management, flight training, maintenance training and procedures, medical certification of airmen, and procedures for security personnel.

Applicants should address each of the following dimensions separately describing all relevant experiences for each. Note: These leadership dimensions are part of the Administrator's Executive Workforce Planning Initiative and represent the competencies that all FAA Executives must possess. Describe your accomplishments in the following areas as they relate to this position:

- **Leadership Requirements**

1. Building Relationships: Describe how you have effectively communicated complex information to a variety of audiences, both within and outside of your organization. Explain how you have built alliances with internal and external stakeholders and how you obtained cooperation from others on difficult issues without losing their future support. Include information on how you network with others in your profession.

2. Achieving Operational Results: Describe your experience in obtaining and managing human capital, financial resources, contracts and technology for your organization. Explain how you have measured and evaluated outcomes and made improvements to the products or services in your organization.

3. Leading People: Describe your experience managing organizations and how you have incorporated diversity, dealt with conflict, and used rewards, mentoring, development or other techniques to build teamwork and cooperation.

4. Leading Strategic Change: Describe your experience in leading and managing change through vision, strategic planning, and incorporating innovative ideas and techniques, and how you have avoided or overcome obstacles.

- **Technical Requirements**

1. Knowledge of human factors scientific principles, human factors research, and human factors engineering, and the application of human factors theories, concepts and principles to systems development and major systems acquisitions.

2. Skill in delivering, designing, and/or implementing human factors services or programs to a wide variety of customers.

Basic salary is \$110,400 - \$155,300. In accordance with applicable FAA travel regulations, full relocation benefits will be paid. This position requires a secret security clearance. Some travel may be required. U.S. Citizenship is required. Applications must be received by August 10, 2005. For more information, please contact Rebecca Korelec, 202-267-3084 or by e-mail:

[Rebecca.Korelec@faa.gov](mailto:Rebecca.Korelec@faa.gov)

**Updated Guideline for Human Factors Assessments in Investment and Business Case**

**Analysis:** The guideline for conducting Human Factors Assessments in Investment Analysis has been revised. Included are changes in FAA Acquisition Management System terminology, updates to human factors references, and integration of human factors concepts for the definition and process of addressing program human factors costs, risks, and benefits with the commonly used risk management grid. The revised guideline is available by pointing to the human factors website workbench: <https://www.hf.faa.gov/Portal/techrptdetails.aspx?id=1409>. *This activity supports the Administrator's Flight Plan Goal for Organizational Excellence, Objective 3: Make decisions based on reliable data to improve our overall performance and customer satisfaction.* (G. Hewitt, ATO-P R&D)

**Human Factors in the System Engineering Manual:** An updated version of Human Factors Section 4.8.3 has been prepared for inclusion in the revised FAA System Engineering Manual being prepared by ATO-P (System Engineering). It incorporates the new terminology of the OMB Exhibit 300, updates the definition of the 24 human factors areas of interest, revises 14 key human factors activities in the acquisition program process, updates tools and aids to include new guidance tools and new chapters from the Human Factors Job Aid, and provides newer

versions of references. *This activity supports the Administrator's Flight Plan Goal for Organizational Excellence, Objective 3: Make decisions based on reliable data to improve our overall performance and customer satisfaction.* (G. Hewitt, ATO-P)

**Laboratory Visit:** Researchers at the William J. Hughes Technical Center's Research and Development Human Factors Laboratory hosted a visit by graduate students from MIT's Human Automation Laboratory. The students support research on complexity in Air Traffic Control conducted for CAMI. *This activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 7: Enhance the safety of FAA's air traffic systems.* (B. Willems, A. Clark, WJHTC)

**Human Performance Modeling:** William J. Hughes Technical Center Personnel from the Human Factors Research and Development Laboratory hosted a meeting with five researchers supporting human performance modeling activities at NASA-Ames Research Center. The researchers observed ongoing data collection activities for the Future En Route Workstation Study. Part of the data will provide input to the human performance models currently under development. The models include AIR-MIDAS (San Jose University), Micro-Saint (Micro Analysis and Design, Inc.), and OMAR (BBN Technologies, Inc.). The exchange of data and information is part of an implementation plan between NASA-Ames and the Technical Center. *This activity supports the Administrator's Flight Plan Goal for Greater Capacity, Objective 3: Increase on-time performance of scheduled carriers.* (B. Willems, A. Clark, WJHTC)

**TSD:** William J. Hughes Technical Center Personnel from the Human Factors Research and Development Laboratory accompanied the Traffic Flow Management Modernization (TFM-M) Human Factors Team to the US Airways Operations Center. The Team is currently investigating how the Traffic Situation Display (TSD) is used by the FAA and the airlines. They observed operations to identify the TSD functions that are commonly used as well as those used in special situations. TFM-M will replace the TSD with a system that supports existing as well as future capabilities. The Human Factors Team will stay closely involved to ensure that the users' tasks, for both the FAA and the airlines are considered in the development of the new system. *This activity supports the Administrator's Flight Plan Goal for Greater Capacity, Objective 3: Increase on-time performance of scheduled carriers.* (T. Yuditsky, A. Clark, WJHTC)

**User Identification:** Engineering research psychologists from the William J. Hughes Technical Center's NAS Human Factors Group presented a poster titled "Human Factors Considerations for User Identification on Air Traffic Control Systems" at the Symposium on Usable Security and Privacy held at Carnegie-Mellon University. The poster examines the cognitive and social pressures experienced by FAA Technical Operations personnel in managing the numerous passwords and other user identification techniques employed in the National Airspace System. It identifies important environmental, task, and user differences between the FAA workplace and the typical information technology workplace where the majority of the research, policies, and technology in this area exist. Finally, the poster makes recommendations for improving the usability of FAA user identification methods and reducing the impact of complying with increased information security requirements. *This research supports the Administrator's Flight Plan Goal for Increased Safety, Objective 7: Enhance the safety of FAA's air traffic systems.* (K. Allendoerfer, A. Clark, WJHTC)

## Technical Information: Human Factors Reports Database

The Human Factors Reports Database has over 1400 articles from 29 different sources, including the William J. Hughes Technical Center, CAMI, NASA and EUROCONTROL. There are also articles from research conducted at several universities. To access the reports, point to: [www.hf.faa.gov/Workbench/search.aspx](http://www.hf.faa.gov/Workbench/search.aspx). The database is updated regularly, and we will keep you informed about the latest articles. Each month we will list articles that have been added to the database. Here is a list of recent additions:

Della Rocco, P. S. (1999). *The Role of Shift Work and Fatigue in Air Traffic Control Operational Errors and Incidents* (Rep. No. DOT/FAA/AM-99/02). Washington D.C.: FAA Office of Aviation Medicine. <http://www.hf.faa.gov/Workbench/techrptdetails.aspx?id=1635>

Endsley, M. R. & Rodgers, M. D. (1994). *Situation awareness information requirements for en route air traffic control* (Rep. No. DOT/FAA/AM-94/27). Washington D.C.: FAA Office of Aviation Medicine. <http://www.hf.faa.gov/Workbench/techrptdetails.aspx?id=991>

Inspector General (2003). *Operational Errors and Runway Incursions: Progress Made, but the Number of Incidents is Still High and Presents Serious Safety Risks* (Rep. No. AV-2003-040). Washington, D.C.: Department of Transportation, Office of Inspector General. <http://www.hf.faa.gov/Workbench/techrptdetails.aspx?id=1633>

McFarland, A. & Maroney, D. (2001). *Eliminating the altitude-for-direction rule and implementing reduced vertical separation minimum in the U.S.* (Rep. No. MP01W0000167). McLean, Virginia: MITRE. <http://www.hf.faa.gov/Workbench/techrptdetails.aspx?id=1632>

O'Connor, W. F. & Pearson, R. G. (1965). *ATC System Error and Appraisal of Controller Proficiency* (Rep. No. AM-65-10). Washington D.C.: FAA Office of Aviation Medicine. <http://www.hf.faa.gov/Workbench/techrptdetails.aspx?id=1631>

*This initiative supports the Administrator's Flight Plan Goal for Organizational Excellence, Objective 3: Make decisions based on reliable data to improve our overall performance and customer satisfaction*

Point of Contact: Dino Piccione, ATO-P R&D

**HFES:** The following papers written by William J. Hughes Technical Center researchers will be presented at the Human Factors & Ergonomics Society Annual meeting in September:

- Ahlstrom, V. (2005). A comparison of subject-based classification strategies for enhanced usability.
- Ahlstrom, U., & Arend, L. (in press). Color Usability on Air Traffic Control Displays.

- Friedman-Berg, F., & Ahlstrom, U. (in press). Evaluating Controller Use of Advanced Weather Products by Evaluating User Interaction Patterns.

*This research supports the Administrator's Flight Plan Goal for Increased Safety, Objective 7: Enhance the safety of FAA's air traffic systems.*

Point of Contact: E. Stein, WJHTC

**JPDO Briefing:** William J. Hughes Technical Center personnel from the National Airspace System Human Factors Group will brief Sherry Boerner, JPDO Evaluations and Analysis Director, concerning research activities being conducted in support of future concepts and acquisition support activities. Presentations will include demonstrations of the future en route workstation and the weather information displays developed for terminal applications. *This activity supports the Administrator's Flight Plan Goal for Organizational Excellence, Objective 3: Make decisions based on reliable data to improve our overall performance and customer satisfaction* (A. Clark, WJHTC)

*More information on human factors research can be found at the FAA Human Factors (ATOP-R&D) web site: <http://www.hf.faa.gov>*

Paul Krois  
FAA (ATO-P R&D Human Factors)



**July 19-21, 2005** – Aviation Safety Management Systems Symposium, Ritz-Carlton Tyson's Corner, McLean, VA <http://www.mitrecaasd.org/safety/>

**July 22-28, 2005** – HCI International 2005, 11<sup>th</sup> International Conference on Human-Computer Interaction, Caesars Palace, Las Vegas, NV [hci2005@ecn.purdue.edu](mailto:hci2005@ecn.purdue.edu)

**July 25-31, 2005** – EAA AirVenture Oshkosh 2005, Oshkosh, WI <http://www.airventure.org>

**August 15-18, 2005** - 43rd AIAA Aerospace Sciences Meeting and Exhibit, Hyatt Regency San Francisco at Embarcadero Center, San Francisco, CA <http://www.aiaa.org/>

**August 18-21, 2005** - 113<sup>th</sup> Convention of the American Psychological Association, Wash, DC <http://www.apa.org/convention>

**August 22-26, 2005** – SAE G-10 (Behavioral Engineering Technology Committee Meeting, Washington, DC [http://forums.sae.org/access/dispatch.cgi/TEAG10\\_pf](http://forums.sae.org/access/dispatch.cgi/TEAG10_pf)

*August 29 – September 1, 2005 – ATO Leadership Summit, Washington, DC*

**September 11-15, 2005** – International Conference on Fatigue Management in Transportation Operations, Seattle, WA <http://scitech.dot.gov/research/human/>

**September 12-16, 2005** – Interact 2005, Tenth IFIP TC13 International Conference on Human-Computer Interaction, Rome, Italy <http://www.interact2005.org/>

**September 13-14, 2005** – Third ICAO-IATA LOSA TEM Conference, Kuala Lumpur, Malaysia [DMaurino@icao.int](mailto:DMaurino@icao.int)

**September 15-18, 2005** - Conjoint Meeting of the Australasian Society of Aerospace Medicine and the Asia Pacific Federation of Aerospace Medical Association, Gold Coast, Queensland, Australia. [www.asam.org.au](http://www.asam.org.au).

**September 19-23, 2005** – ANA 2005 Aviation Conference and Exhibition, Connecticut Convention Center, Hartford. CN <http://www.aerospace-na.com/ace2005.asp>

**September 20-21, 2005** - R,E&D Advisory Committee Meeting (joint meeting with NASA's Aerospace Research Advisory Committee), Bessie Coleman Auditorium, FAA Headquarters, Wash., DC [Gloria.dunderman@faa.gov](mailto:Gloria.dunderman@faa.gov)

**September 20-22, 2005** – Second Safety Across High-Consequence Industries Conference, Saint Louis University, St. Louis, MO [http://parks.slu.edu/msasm\\_conference/index.html](http://parks.slu.edu/msasm_conference/index.html).

**September 20-24, 2005** - 1st Congress of the International Society for Cultural and Activity Research (ISCAR), Seville, Spain [iscar2005@iscar.org](mailto:iscar2005@iscar.org)

**September 21-23, 2005** - Cargo Facts 2005- 11th Annual Aircraft Symposium, Sheraton Hotel & Towers, Seattle, Washington [ashoemaker@cargofacts.com](mailto:ashoemaker@cargofacts.com)

**September 25-28, 2005** - 11th Ka and Broadband Communications Conference and 23rd AIAA International Communications Satellite Systems Conference 2005 (organized by IIC), Aurelia Convention Center, Rome, Italy <http://www.aiaa.org/>

**September 26-28, 2005** - AIAA 5th Aviation, Technology, Integration, and Operations Forum (ATIO), Hyatt Regency Crystal City, Arlington, VA <http://www.aiaa.org/>

**September 26-28, 2005** - AIAA 2nd Intelligent Systems Conference (IS), Hyatt Regency Crystal City, Arlington, VA <http://www.aiaa.org/>

**September 26-30, 2005** – Human Factors and Ergonomics Society 49<sup>th</sup> Annual Meeting, Royal Pacific Resort at Universal Orlando, Orlando, FL <http://hfes.org/meetings/menu.html>

**October 3-6, 2005** – SAE 2005 AeroTech Congress and Exhibition, Gaylord Texan Resort and Convention Center, Dallas/Fort Worth Airport Area, Texas <http://www.sae.org/events/conferences/aerospace/>



**October 6-9, 2005** – Aviation North Expo Conference, Fairbanks Princess Riverside Lodge, Fairbanks, AK [www.AviationNorth.org](http://www.AviationNorth.org)

*October 9-11, 2005* – Aviation Maintenance Star Symposium, Ritz-Carlton, Phoenix, AZ [www.STARSymposium.com](http://www.STARSymposium.com)

*October 20-21, 2005* – 2<sup>nd</sup> Annual FAA International Safety Forum, Westfields Marriott, Chantilly, VA <http://www.faa.gov/news/conferences/safetyforum/index.cfm?topic=6>.

**October 24-25, 2005** – National Academies Institute of Medicine Annual Meeting, National Academy of Sciences, Washington, *DC* <http://wwwsearch.nationalacademies.org/>

**October 24-26, 2005** – 43<sup>rd</sup> SAFE Symposium, Grand America Hotel, Salt Lake City, UT <http://www.safeassociation.org/symposium.htm>

**October 26-28, 2005** – Air Cargo Americas, Radisson Centre, Miami, FL [www.aircargoamericas.com](http://www.aircargoamericas.com)

**October 30-November 7, 2005** – ATCA 50<sup>th</sup> Annual Conference and Exposition, Dallas, TX [http://www.atca.org/event\\_items.asp](http://www.atca.org/event_items.asp).

**October 30—November 3, 2005** – 24<sup>th</sup> Digital Avionics Systems Conference, Hyatt Regency Crystal City, Wash., DC <http://www.dasconline.org>

**November, 2005** – DoD TAG (Human Factors Engineering Technical Advisory Group) Meeting, Baltimore, MD <http://hfetag.dtic.mil/meetschl.html>

**November 3-5, 2005** - AOPA Expo, Tampa, Florida [www.aopa.org](http://www.aopa.org)

**November 6-9, 2005** - ACI World / Pacific Conference and Exhibition, Auckland, New Zealand. [www.auckland-airport.co.nz](http://www.auckland-airport.co.nz)

**November 7-9, 2005** – DoD TAG, Baltimore, MD <http://hfetag.dtic.mil/meetschl.html>

**November 7-10, 2005** – Flight Safety Foundation 58<sup>th</sup> Annual International Air Safety Seminar, Moscow, Russia [http://www.flightsafety.org/iass05\\_cfp.html](http://www.flightsafety.org/iass05_cfp.html)

**November 7-10, 2005** - Ergonomics and Human Factors: Applications in Occupational Safety and Health, Harvard School of Public Health, Cambridge, MA <http://www.hsph.harvard.edu/ccpe/programs/EHF.shtml>

**November 8-10, 2005** – Aerospace Testing Expo, North America: Scientific Conference and Technology Forum, Long Beach Convention Center, Long Beach, CA <http://www.aerospacetesting-expo.com/northamerica/conf+forum.html>



**November 8-10, 2005** – Maintenance, Repair & Overhaul Exhibition Asia, Suntec Convention Center, Singapore <http://www.aviationnow.com/conferences/masmain.htm>

**November 10, 2005** - 34th Annual Meeting of the Society for Computers in Psychology, Toronto, Ontario, Canada <http://www.scip.ws>

**November 10 - 13, 2005** - 46th Psychonomic Society Annual Meeting, Toronto, Ontario, Canada <http://www.psychonomic.org/meet.htm>

**November 15-17, 2005** - National Business Aviation Association's 58th Annual Meeting & Convention, New Orleans, LA [www.nbaa.org](http://www.nbaa.org)

**November 16-17, 2005** – IEE Human Factors Engineering Professional Network/MoD Human Factors Integration Defense Technology Center “People and Systems Symposium: Who Are We Designing For?”, Grange City Hotel London, UK <http://conferences.iee.org/pas2005>

**January 9-12, 2006** - 44th AIAA Aerospace Sciences Meeting and Exhibit, Reno Hilton, Reno, NV <http://www.aiaa.org/>

**January 22-26, 2006** – TRB 85<sup>th</sup> Annual Meeting, Washington, DC <http://trb.org/calendar/>

**March 13-15, 2006** – Flight Safety Foundation 18<sup>th</sup> Annual European Aviation Safety Seminar, Athens, Greece <http://www.flightsafety.org/seminars.html#eass>

**March 20-23, 2006** – 16<sup>th</sup> Annual AAMI/FDA International Conference on Medical Device Standards and Regulation, Hyatt Regency, Reston, VA  
<http://www.aami.org/meetings/isc/index.html>

**March 22 - 25, 2006** - Society for Behavioral Medicine Annual Meeting and Scientific Sessions, San Francisco, CA [www.sbm.org/annualmeeting/index.html](http://www.sbm.org/annualmeeting/index.html)

**March 23-25, 2006** - 17th Annual International Women in Aviation Conference, Opryland Hotel Nashville, TN <http://www.wai.org/>

**April 4-10, 2006** – Sun ‘n Fun, Lakeland, FL <http://www.sun-n-fun.org/content/>

**April 25-27, 2006** – Maintenance, Repair & Overhaul (MRO) Conference & Exhibition, Phoenix Civic Plaza, Phoenix, AZ <http://www.aviationnow.com/conferences/mromain.htm>

**May 1-4, 2006** - 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference; 14th AIAA/ASME/AHS Adaptive Structures Conference; 7th AIAA Gossamer Spacecraft Forum; 2nd AIAA Multidisciplinary Design Optimization Specialist Conference; 1st AIAA Non-Deterministic Approaches Conference, Hyatt Regency Newport, Newport, RI <http://www.aiaa.org/>

**May 9-11, 2006** – Flight Safety Foundation 51<sup>st</sup> Annual Corporate Aviation Safety Seminar, Phoenix, AZ <http://www.flightsafety.org/seminars.html#eass>

**May 14-18, 2006** - 77<sup>th</sup> Annual Scientific Meeting of the Aerospace Medical Association, Caribe Royale Hotel, Orlando, FL <http://www.asma.org/>

**May 25-28, 2006** – American Psychological Society 18<sup>th</sup> Annual Convention, New York Marriott Marquis, New York City, NY <http://www.psychologicalscience.org/convention/>

**June 11-14, 2006** – The American Society of Safety Engineers Safety 2006 Conference, Washington State Convention and Trade Center, Seattle, WA  
<http://www.asse.org/2006pdcallforpapers.pdf>

**June 24-26, 2006** – AAMI Conference & Exposition, Wash, DC  
<http://www.aami.org/proposals/index.html>

**July, 2006** - 26th International Congress of Applied Psychology, Athens, Greece  
[dgeorgas@dp.uoa.gr](mailto:dgeorgas@dp.uoa.gr) ,  
[http://www.erasmus.gr/dynamic/conventions.asp?conv\\_id=21r/dynamic/conventions.asp?conv\\_id=21](http://www.erasmus.gr/dynamic/conventions.asp?conv_id=21r/dynamic/conventions.asp?conv_id=21)

**July 24-30, 2006** – EAA AirVenture, Oshkosh, WI <http://www.airventure.org/>

**August 10-13, 2006** – American Psychological Association Annual Meeting, New Orleans, LA  
<http://www.apa.org/convention05/future.html>

**September 10-14, 2006** - 54th International Congress of Aviation and Space Medicine, Bangalore, India. A preliminary registration form may be found at <http://www.isam-india.org/conference44/newreg.php>.

**October 23-25, 2006** – 44<sup>th</sup> Annual SAFE Symposium, Reno Hilton Hotel, Reno, NV  
<http://www.safeassociation.org/symposium.htm>

*Note: Calendar events in Italics are new since the last Newsletter*



Comments or questions regarding this newsletter?  
Please contact Bill Berger at (334) 271-2928  
or via e-mail at [bill.ctr.berger@faa.gov](mailto:bill.ctr.berger@faa.gov)

